I Claim:

1. A test circuit for determining at least one of a voltage, a current, and a power value for an integrated circuit during operation of the integrated circuit, the test circuit comprising:

a first recording unit for recording and counting at least two successively produced signal states of a reference signal used for producing an output voltage in a voltage generator circuit generating the output voltage being an internal voltage supply for the integrated circuit;

a second recording unit for recording signal states of the time reference signal; and

an output circuit connected to said first and second recording units, said output circuit outputting a numerical value of the signal states of the reference signal and of the time reference signal for use in determining an electrical characteristic variable.

2. The circuit according to claim 1, wherein said first and second recording units each have a counter register for counting signal state changes of the reference signal and of the time reference signal, respectively.

3. The circuit according to claim 1,

further comprising a multiplexer receiving and controlled by an operating mode signal, said multiplexer having a first connection providing the reference signal and a second connection providing the time reference signal;

wherein said first recording unit has at least two counter registers for respective counting and storing the signal states of the reference signal for different operating states of the integrated circuit, said first recording unit is connected to said first connection outputting the reference signal; and

wherein said second recording unit has at least two counter registers for respective counting and storing the signal states of the time reference signal for the different operating states of the integrated circuit, said second recording unit is connected to said second connection outputting the time reference signal.

4. The circuit according to claim 1, wherein said first and second recording units each have nonvolatile memory elements which can be programmed permanently, for storing a fixed value.

5. The circuit according to claim 1, further comprising a connection providing the reference signal, said first recording unit is connected to said connection for the reference signal functioning as a control signal for charging pulse production in the voltage generation circuit being a voltage pump circuit.

6. A method for determining at least one of a voltage, a current, and a power value for an integrated circuit during operation of the integrated circuit, which comprises the steps of:

recording and counting at least two successively produced states of a reference signal for use in producing an output voltage in a voltage generator circuit generating the output voltage as an internal voltage supply for the integrated circuit;

storing a number of the states of the reference signal counted;

recording a time period within which the states of the reference signal are recorded; and

using the number of the states, successively counted, of the reference signal and the time period for calculating at least

one electrical characteristic variable of the integrated circuit, the electrical characteristic variable being selected from the group consisting of the voltage, the current and the power value.

7. The method according to claim 6, which further comprises recording and counting the states, successively produced, of the reference signal used in producing charging pulses for the voltage generation circuit being a charge pump circuit for the integrated circuit, and the number of the states, successively produced, is stored, with the number corresponding to a number of the charging pulses produced.

8. The method according to claim 7, which further comprises:

functioning in a reference operating mode with an external voltage supply having a known magnitude;

determining and storing continuously the number of the charging pulses as a charging pulse reference; and

recording and storing continuously the time period within which the number of the charging pulses is determined.

9. The method according to claim 8, which further comprises:

determining the number of the charging pulses and the time period n-times in a measurement loop; and

forming a mean value from their respective sum.

10. The method according to claim 8, which further comprises:

operating in a first operating mode corresponding to the reference operating mode with the external voltage supply having an unknown magnitude;

determining a first number of the charging pulses in the first operating mode;

recording a first time duration within which the first number of the charging pulses is determined in the first operating mode; and

determining an external voltage which is applied to the integrated circuit in the first operating mode on a basis of the number of the charging pulses being a charging pulse reference, the time period being a time reference, the first time duration, the first number of the charging pulses and an external reference voltage which is known from the reference operating mode.

11. The method according to claim 10, which further comprises:

stopping a counting of the charging pulses when an operating mode change occurs; and

continuing the counting again when the operating mode once again corresponds to the reference operating mode.

12. The method according to claim 10, which further comprises:

functioning in a second operating mode;

determining a second number of the charging pulses in the second operating mode;

recording a second time duration within which the second number of the charging pulses is determined in the second operating mode; and

determining one of a power consumed by the integrated circuit in the second operating mode, or a current drawn on a basis of the charging pulse reference, the first time duration, the first number of the charging pulses, the second time duration and the second number of the charging pulses.

13. The method according to claim 10, which further comprises:

operating in a second operating mode for the external voltage supply which is the same as the reference operating mode;

determining a second number of the charging pulses in the second operating mode;

recording a second time duration within which the second number of the charging pulses is determined in the second operating mode; and

determining a power consumed by the integrated circuit in the second operating mode, or a current drawn on a basis of the charging pulse reference, the time reference, the second time duration, and the second number of charging pulses.

14. The method according to claim 12, which further comprises:

determining power consumed by the integrated circuit or a current drawn for each of at least two different operating modes; and

using different counter registers for recording respectively required values, with at least one of the counter registers being permanently assigned to a respective one of the operating modes, and being activated in the respective operating mode to record a respective value.